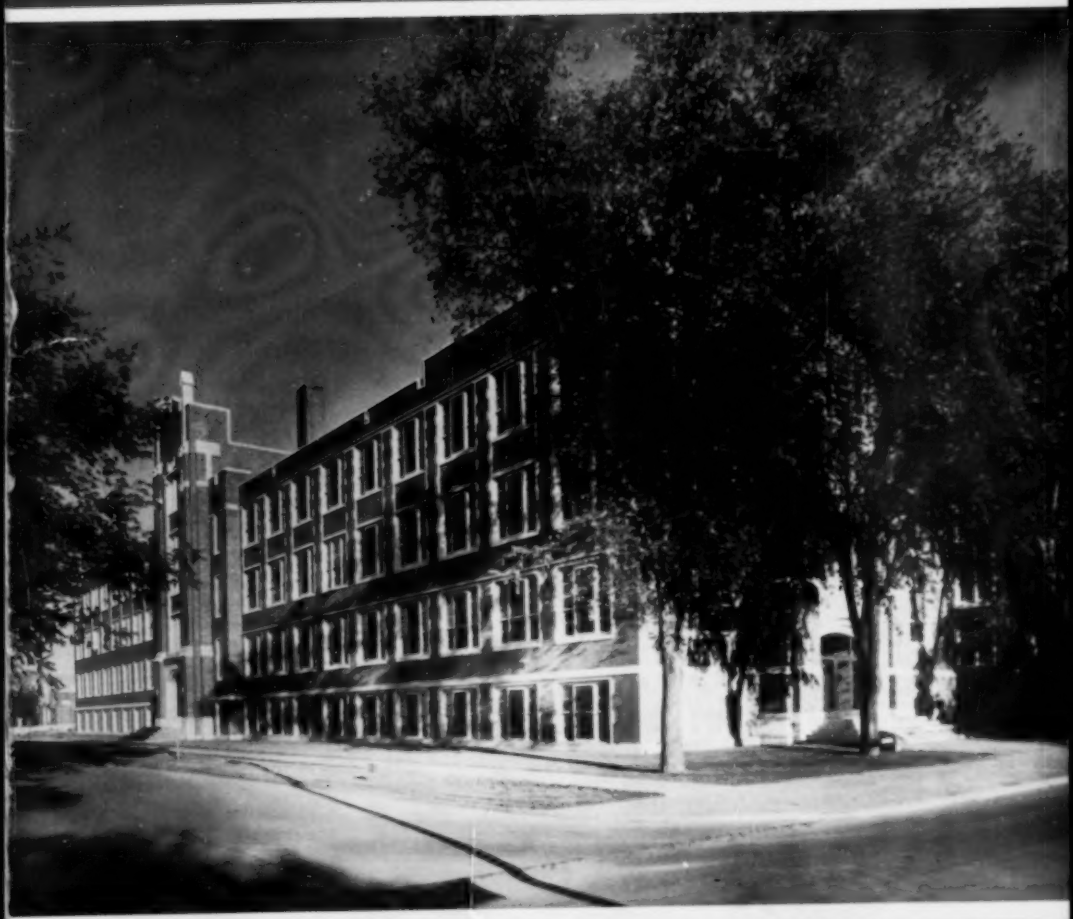
ARCHIVES OF PEDIATRICS

July 1961



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References: 1. Freedman, A. M.: Pediat. Clin. North America *5*:573 (Aug.) 1958. 2. Nathan, L. A., and Andelman, M. B.: Illinois M. J. *112*:171 (Oct.) 1957. 3. Santos, I. M. H., and Unger, L.: Ann. Allergy *18*:179 (Feb.) 1960. 4. Litchfield, H. R.: New York J. Med. *60*:518 (Feb. 15) 1960.

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CONTENTS

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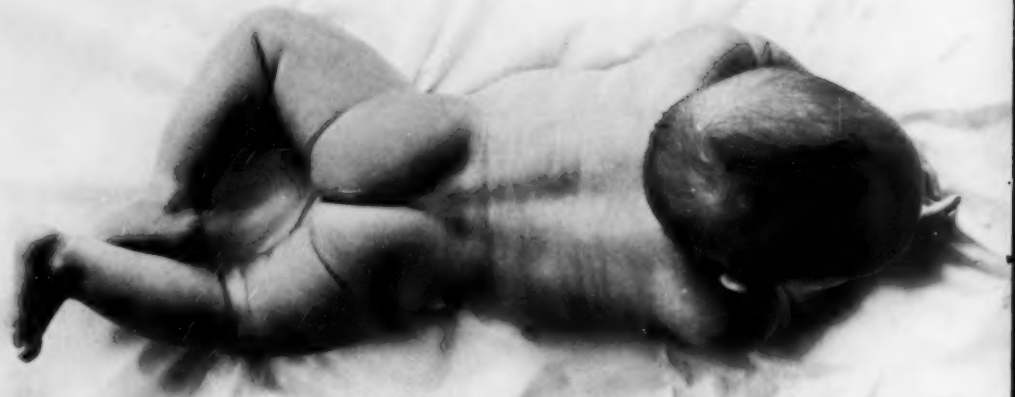

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The Cover...

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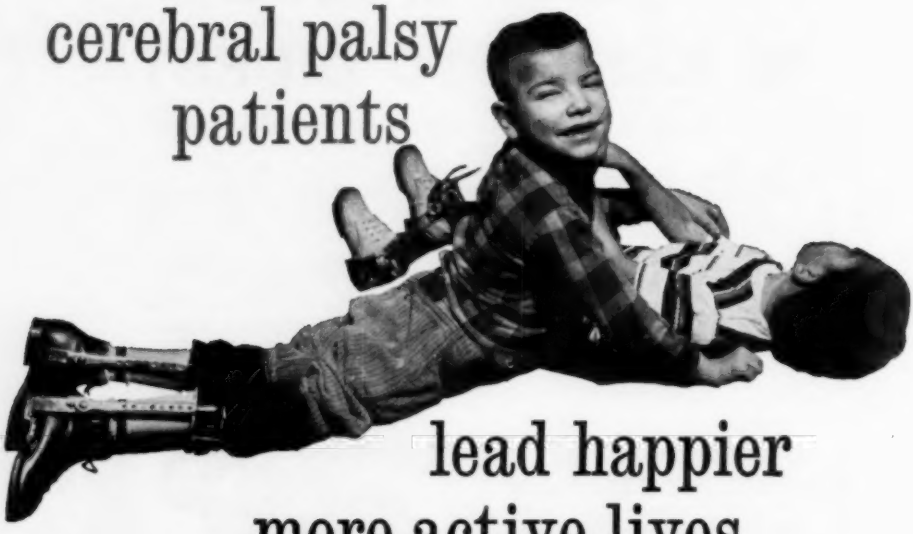

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1. Phelps, P.M., Arch. of Ped., 76:243-250, June, 1959.
2. Spears, C. A., Annals of N.Y. Acad. of Sc., Mar. 30, 1960, Vol. 86.

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Guest Editorial...

The Well Baby

KENNETH S. SHEPARD, M.D.*
Illinois

WHAT the operating room is to the surgeon, the hammer is to the neurologist, the stethescope to the internist, the plaster-cast to the orthopedic-man—the Well Baby Workshop is to the pediatrician.

This is a field often shunned by the general practitioner and a "necessary evil" to the pediatrician. But as long as the attitude that this vital and rewarding work is a bore and a tiresome necessity, little else than a routine feeding program will be accomplished.

In today's civilization as we see it here in this country, it is obviously more and more necessary that someone who has a medical background and the stability which it produces, be responsible for the development of the normal individual. Parents are beset by would-be Freuds who have invaded our school system and are attempting therapy on our children, most of whom are not in need of therapy.

The role of the pediatrician is becoming more and more a liason between would-be "do-gooders" in our socio-economic and educational systems and our ultra-scientific straightforward medical minds.

It has been recognized over the past few years that the care of the infant from birth through two years of age may well be the most important phase in his entire life as far as development both physically and mentally is concerned. The subconscious years are extremely important to the conscious years which follow. The art of well baby care requires of the practitioner love, empathy, and deep interest in human beings recognizing their failures, annoyances and shortcomings. It does not come from reading a book nor even a dozen books on the subject, nor from hearing a few didactic lectures. It comes from seeing hundreds and hundreds of babies and their parents.

* Director of Well Baby Clinic Northwestern School of Medicine.

Too often these days, young doctors are turned out on the public with very little training in the important two first years of life. They have had a few lectures, but no long-term experience. Unfortunately, in most instances, these young men are given their education and their instructions by part-time teaching physicians whose heavy practice demands much of them nervously, physically, emotionally and whose "tiredness of heart", if I may use the expression, is contagious. Those who have anything to do with the selection of teachers in this field, should do their utmost to select the type of man who radiates enthusiasm and is able to share the excitement of his work among well babies with his students so that the student leaves the well baby clinic in his school with the full conviction that in preventive medicine and preventive psychiatry lies the answer to many medical, social and world-shaking problems of our times.

The training of the young physician in the development of his ability to create an atmosphere of confidence in the new mother is essential. If the new mother is able to treat every situation with consistency and confidence instilled by her physician, a stable child will result after the first two years. It cannot be over-emphasized that the development of techniques in the first two years of well baby care will result in a healthier race of individuals, both physically and mentally. These early years of life of a human being sets his whole life pattern physically, emotionally and developmentally. The doctor may well be responsible for much of what becomes of this individual.

636 Church St., Evanston

Congenital Heart Disease as a Familial Occurrence

JOHN LESLIE JOHNSON, M.D.*

California

CONGENITAL HEART DISEASE as a hereditary or familial occurrence has been difficult to prove due to two factors, namely, until recent years the lesions put a definite limitation on life expectancy, and human families tend to be relatively small. This is a report of multiple cases of congenital heart deformities occurring in eleven families that have been studied in the Los Angeles area. These families were observed between 1951 and 1960 and involved 67 individuals as members of the immediate families with 25 members being affected. Special emphasis is placed on one family which includes the mother and three daughters, each of whom had an atrial septal defect in a similar position in the heart and have similar electrocardiographic deformities.

The earliest reported examples of familial congenital heart defects, as reported by Brown,[1] are that of Lancisi in 1701, who described dextrocardia occurring in four generations, and that of Cooper and Engelot[2] in 1818, who described a family with twelve children, two of whom died probably as a result of an atrial septal defect. In recent years, congenital heart deformities as a familial or hereditary trait was reported by Debre[3] in 1923. He reported a mother and child each having a ventricular septal defect. In 1927 Abbott[4] described cardiac anomalies in brothers and sisters in eleven families. In 1932 Medvei and Rosler[5] described three families with multiple occurrence of heart deformities. Family one included a first child who died at six years of age with cyanosis and dextrocardia and a second child born four years later also with cyanosis. Family two involved a first child with cyanosis who died at the age of five weeks and the second child also with cyanosis born two years later who died at three weeks of age. Family three involved the mother and a third child each having a patent ductus arteriosus. These authors also reviewed the literature and found evidence of 34 families in which congenital heart

*Department of Pediatrics College of Medical Evangelists, Los Angeles, California.

disease occurred in more than one member. Their findings indicate that hereditary congenital heart defects appear to occur more commonly in females than in males.

In 1935 Sietz and Bowmann[6] reported septal defects in a father and four children. In 1939 Brown reported occurrence of cardiac anomalies in siblings in six families. In 1945 Stein and Barber[7] reported congenital heart disease in a mother and two of her children. The mother had coarctation of the aorta, the daughter had enlargement of the right ventricle and main pulmonary artery, and the son had patent ductus arteriosus. The mother's sister had three sons, one of whom died at the age of eight years with congenital heart disease, another was rejected from the army because of a similar condition, and a third probably has a congenital heart deformity.

Tucker and Kinney,[8] in 1945, reported a twenty year old white woman who died probably from the effect of a large ventricular septal defect while six months pregnant; the unborn fetus was found to have a similar defect.

In 1946 Hans Kjaergaard[9] reported a family with patent ductus arteriosus in three sisters out of four girls and one boy. In 1948 Courter, Felson and McGuire[10] reported two sisters aged 21 and 25 years with evidence of Lutembacher's syndrome. These findings were based on clinical examinations only and no heart catheterization, surgical or pathological report is included. None of the electrocardiograms show conduction defects. In their review of the literature no previous Lutembacher's syndrome on a familial basis had been described.

In 1949 Vakel and Daruwalla[11] reported five cases of ventricular septal defect in a single family. Two sisters out of seven had this deformity, one son of eight from one sister, and one son and one daughter out of two sons and a daughter from the other sister had ventricular septal defects.

In 1957 Lamy, deGrouchy and Schweisguth[12] in Paris reviewed 1,188 patients with congenital heart deformities, studied clinically, by heart catheterization and angiocardiography, and by surgery; they found 30 families with multiple occurrences of congenital heart deformities. Tetralogy of Fallot occurred in four families, pulmonary valvular stenosis in four, patent ductus arteriosus in three, ventricular septal defect in one, atrial septal defect in two, coarcta-

tion of aorta in two, and miscellaneous deformities in the fourteen remaining. In seven families defects were similar in parents and children.

In 1958 Carlton, Abelmann, and Hancock[13] reported three families with multiple cases of congenital heart defects. The first family was composed of parents and nine children. One child had an atrial septal defect probably of the secundum type and another had coarctation of the aorta and a bicuspid aortic valve. The second family consisted of the parents and five children. The two oldest children each had an atrial septal defect. The third family of three sisters each had an atrial septal defect, and a daughter of the youngest had a ventricular septal defect. These authors also reviewed the literature and unpublished data since 1945 and found one hundred forty-one families with multiple occurrence of congenital heart defects. Of these, one hundred were of different or unspecified types within each family, forty-one had familial homogeneity, and in twelve, more than two members were affected. Four of the families exhibited atrial septal defects. In the forty-one families with similar defects the following defects are listed in the order of occurrence; patent ductus arteriosus, ventricular septal defect, tetralogy of Fallot, atrial septal defect, pulmonary stenosis, coarctation of aorta, and transposition of the great vessels.

In 1959 Ross[14] described multiple occurrences of congenital heart defects in twins. Out of thirty-seven sets of twins, two of the eleven monozygotic children and two of the twenty-six dizygotic children were affected. None had similar defects, however.

In November 1960, Bocos, Eagan and Orgain[15] tabulated a family group covering three generations all of whom manifest a nodal rhythm. A mother, two sons and two daughters, four granddaughters from one son and two daughters, and one great-grandson are shown to have a similar nodal bradycardia alternating with auricular fibrillation and flutter.

The incidence of congenital heart disease in children varies considerably depending on the age group involved. Between 1954 and 1956 MacIntosh, Merritt, Richards, Samuels, and Langmann[16,17] reviewed 5,964 pregnancies over a period of more than five years. From this number there were 5,530 live born infants of whom 386 or 7 percent showed some type of congenital malformation, forty-two had deformities of the cardiovascular system. At the same time there were twenty-seven stillborn or neonatal deaths with cardiovascular deformities. In their series, individuals

with congenital heart disease turned out to be 0.9 percent of total births, 10.2 percent of all neonatal deaths, and 0.6 percent of surviving infants.

Ober and Moore[18] studied congenital cardiac malformations in autopsies at Boston Lying-In Hospital between 1931 and 1954. One thousand six hundred sixty-five autopsies (representing approximately 60 percent) were carried out on viable fetuses, stillborn infants, and infants who died in the neonatal period. In 100 of the autopsies, or 6.0 percent, a congenital cardiovascular deformity was present. Nineteen were ventricular septal defect, eleven were coarctation of aorta, six were atrial septal defect, and four were tetralogy of Fallot.

RESULTS

Table I shows that eleven families are affected, and in Table II the sex distribution of the affected members is presented; the proportion is similar to that reported in the literature. Multiple occurrence of ventricular septal defect is limited to females but all other defects observed occurred in both males and females. In Table III, three families are shown to have involvement of a parent and one or more children. In one case an aunt has the same lesion as both father and daughter. In Table IV the frequency of each defect by families is shown. Patent ductus arteriosus is the most frequent with septal defects second.

TABLE I

11 families with multiple occurrences
67 individuals, total (immediate family)
25 affected members

TABLE II

2 families with only males affected
6 families with only females affected
3 families with both males and females affected

TABLE III

8 families with two or more affected siblings only
3 families with a parent or relative and sibling affected

TABLE IV

Number of families	Defect
3	Patent Ductus Arteriosus
2	Atrial Septal Defect
2	Ventricular Septal Defect
2	Pulmonary Stenosis
1	Tetralogy of Fallot
1	Coarctation and Pulmonary Stenosis

TABLE V

SUMMARY OF CASE HISTORIES

Families	Age at Time of Study	Relationship	Method of Proof	Unaffected Siblings	Unaffected Parents
Patent Ductus Arteriosus					
A					
(Q.O.)	8 years	Daughter	Surgery	6	2
(Q.I.)	5 years	Son	Surgery		
B					
(S.Y.)	15 months	Daughter	Surgery	6	2
(S.D.)	15 months	Daughter	Surgery		
C					
(K.T.)	12 months	Daughter	Heart Cath. & Surg.	0	1
(K.To.)	30 years	Father	Clinical		
(K.M.)	20 years	Aunt	Clinical		
Atrial Septal Defect					
D					
(Po.R.)	5½ years	Son	Heart Cath. & Surg.	0	2
(Po.M.)	6½ years	Son	Heart Cath & Surg.		
E					
(B.J.)	11 years	Daughter	Heart Cath. only	0	1
(B.C.)	12 years	Daughter	Heart Cath. & Surg.		
(B.E.)	12 years	Daughter	Heart Cath. & Surg.		
(B.V.)	42 years	Mother	Heart Cath. & Surg.		
Pulmonary Stenosis					
F					
(P.P.)	3 years	Daughter	Heart. Cath.	0	2
(P.J.)	6 years	Daughter	Ht. Cath., Angio & Surg.		
(P.S.)	11 years	Daughter	Clinical		
G					
(Sl.L.)	8 years	Daughter	Heart Cath.	2	2
(Sl.B.)	2 days	Daughter	Post-mortem		
(Sl.K.)	4 years	Son	Clinical		
Tetralogy of Fallot					
H					
(L.1)	4 weeks	Daughter	Clinical	1	2
(L.2)	4 weeks	Daughter	Clinical		
Ventricular Sepal Defect					
I					
(C.S.)	8 months	Daughter	Clinical	2	2
(C.J.)	2 years	Daughter	Ht. Cath. & Surg.		
J					
(M.J.)	6 months	Daughter	Clinical	3	2
(M.K.)	5 years	Daughter	Clinical		
Coarction and Pulmonary Stenosis					
K					
(Co.B.)	16 months	Daughter	Clin. (Pulm. Sten.)	0	1
(Co.R.)	21 years	Father	Surg. (Coarc.)		

A FAMILY (Q)

This family consists of parents and eight children. The five year old and the nine year old are the affected members. All others have no heart difficulty.

"IQ" was five years of age at the time of study (1958) and gave a history of a heart murmur from birth. He tired easily and could not keep up with other children. He was underdeveloped, weighing thirty-three pounds and measuring forty-four inches. There was a loud continuous murmur in the pulmonary area. Blood pressure in the right arm was 100/30-0. Fluoroscopy and x-rays showed an enlarged left atrium and left ventricle and increased vascular pulsations of the lungs. A patent ductus arteriosus was found at surgery.

"OQ" was eight years of age at the time of study (1958) and gave a history of a heart murmur first heard at eleven months of age. She could not keep up with other children her age. There was a loud continuous murmur in the second left interspace. Blood pressure in the right arm was 110/50-40. X-ray and fluoroscopy showed an enlarged left atrium and left ventricle. She underwent surgery on the same day as her brother and a patent ductus arteriosus was also found.

B FAMILY (S)

This family consists of the parents and eight children. There are two involved children.

"YS" had a heart murmur observed at birth. She entered the hospital on December 4, 1957 at fifteen months of age with symptoms of a respiratory infection. During treatment she was considered to be in congestive failure and was digitalized. Electrocardiograms showed left ventricular hypertrophy and x-rays showed cardiac enlargement with increase of the vascular markings. After recovery from the respiratory infection, she was found to have a continuous murmur in the pulmonary area and a blood pressure of 135/40. On December 31, 1957 a patent ductus arteriosus was found at surgery.

"DS" had a heart murmur first heard at one month of age. Her blood pressure was 90/50 in the right arm. At five months an electrocardiogram showed combined ventricular hypertrophy and enlargement of the left atrium. At fourteen months (July 16, 1959) she first exhibited a continuous murmur in the pulmonary area and a blood pressure of 140/60. Electrocardiograms showed left ventricular hypertrophy and x-rays showed an enlarged heart with flooded lungs. On August 18, 1959 at fifteen months of age she underwent surgery for her patent ductus arteriosus.

C FAMILY (K)

This family includes the paternal grandparents, parents, father's sister and the daughter. The affected members are the daughter, father, and aunt.

"TK", the daughter, was first seen at six weeks of age with findings of a heart murmur on a routine examination. A grade IV systolic murmur was best heard along the sternal border. The liver was enlarged. An electrocardiogram revealed evidence of left ventricular hypertrophy and x-rays showed increased vascularity of the lungs with an enlarged right and left ventricle and left atrium. The child was digitalied. Her physical findings did not change and she continued to show a lack of expected height and weight gain. Several electrocardiograms showed increasing left ventricular hypertrophy. Right heart catheterization on March 24, 1960 showed a systolic pressure of 60 mm Hg in the pulmonary artery and a left-to-right shunt at the supra-ventricular level. On June 8, 1960, at thirteen months of age, she underwent surgery and a large window-type patent ductus arteriosus was found.

"ToK", the father, is 30 years of age. He gave a history of a heart murmur from birth and has had no special medical care. Recently his wife stated that he tires easily and sooner than his associates. A grade III systolic murmur is heard at the apex and a grade IV machinery-like murmur is heard in the pulmonary area. Fluoroscopy and x-rays show increased vascularity of the lungs. Electrocardiograms show evidence of left ventricular hypertrophy. The clinical diagnosis is patent ductus arteriosus.

"MK", the child's aunt, is twenty years of age. A murmur was heard from birth and she has had no special medical care. She claims that she has no difficulty in keeping up with others her age. A systolic and diastolic murmur is heard at the apex and a grade IV continuous murmur is heard in the pulmonary area. On fluoroscopy and x-rays there is enlargement of the heart with increased vascularity of the lung fields. The electrocardiogram taken on the first examination shows minimal signs of left ventricular hypertrophy but the tracing of one year later shows definite left ventricular hypertrophy. The clinical diagnosis also is patent ductus arteriosus.

The grandparents refuse any medical examination or care.

D FAMILY (PO)

This family consists of the parents and two children. Both children are involved.

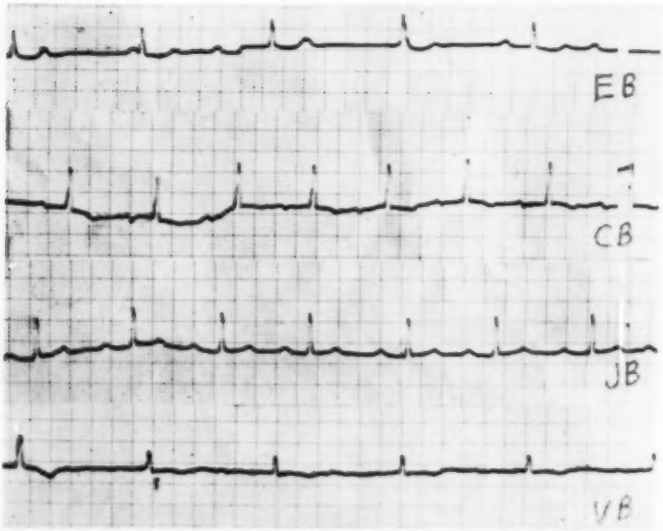
"R.Po": A heart murmur was first heard at five months of age. He had normal growth and development but required more rest than other children his age. Systolic and diastolic murmurs were heard at the apex and a systolic murmur in the third left interspace along the sternal border. X-rays showed increased vascularity of the lungs and an enlarged right ventricle; an electrocardiogram and a vectorcardiogram showed right ventricular hypertrophy and right atrial hypertrophy. Heart catheterization (1957) showed a large left-to-right shunt at the atrial level and the systolic pressure in the pulmonary artery and right ventricle to be 28 mm Hg. Surgery was carried out at five years of age on May 6, 1959 with findings of a large tense right atrium and a low atrial septal defect which was 3½ cm in diameter.

"M.Po": A heart murmur was heard for the first time at five years of age. Growth and development had been slow and he tired more easily than others his age. A systolic murmur in the pulmonary area and a diastolic murmur along the lower left sternal border were heard. The electrocardiogram and vectorcardiogram showed right atrial hypertrophy, right ventricular hypertrophy, and first degree A-V block. X-rays showed increased vascular markings, mild cardiac enlargement, and a prominent pulmonary conus. Heart catheterization (February, 1960) showed a small left-to-right shunt at the atrial level and a systolic pressure in the pulmonary artery of 25 mm Hg. This boy underwent atrial septal closure at six years of age on May 25, 1960.

E FAMILY (B)

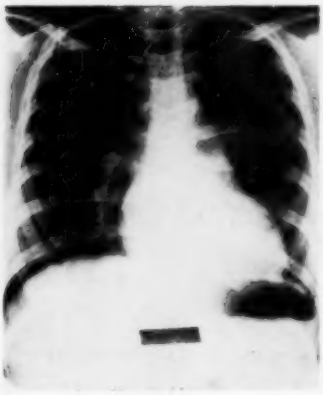
This family includes the parents and three daughters. All members except the father are affected with a similar heart problem. Electrocardiographic and heart catheterization findings are listed in Table VI and Table VII.

"VB", the mother, now forty-five years of age, first discovered that she had a heart murmur at the age of twenty-two during a routine examination. In 1952 because an atrial septal defect was suspected in each of her daughters, she was again examined. This examination showed cardiac enlargement, atrial fibrillation with a ventricular rate of 56, and right ventricular hypertrophy. As with all affected members she is moderately obese and, therefore,

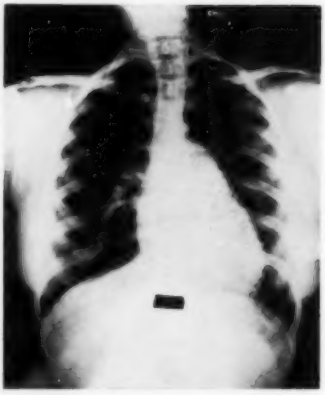


physical signs of her heart are difficult to interpret. Since her first examination in 1952 until just recently she has had to support the whole family as her husband had severe restriction from poliomyelitis. Her work is semi-clerical and she has had no difficulty. Recently, however, she had marked symptoms of increasing fatigue and shortness of breath. She had spells in which she felt close to fainting but she has never done so. She also felt that her heart was beating exceedingly fast. She had a systolic murmur best heard along the left sternal border, and a diastolic murmur at the apex. Pre-operative electrocardiogram, fluoroscopy, and films showed atrial fibrillation, right and mild left ventricular hypertrophy, increased vascularity of the lungs with severe enlargement of the heart. In December, 1959 she underwent right heart catheterization with findings as noted in Table VII. On February 5, 1960 she underwent surgery with the findings of a high atrial defect.

"CB", the oldest daughter, was eleven years of age at the time of her study (1952). She gives a history of a murmur, enlargement of the heart, and heart block first being noted at eight years of age. She always got out of breath easily and could not keep up with other girls her age. She was, however, moderately to severely obese. A systolic murmur was heard in the third left interspace. Her rhythm was irregular. X-rays showed enlargement of the



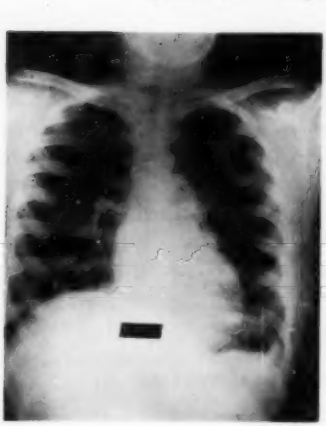
E - B, 1956



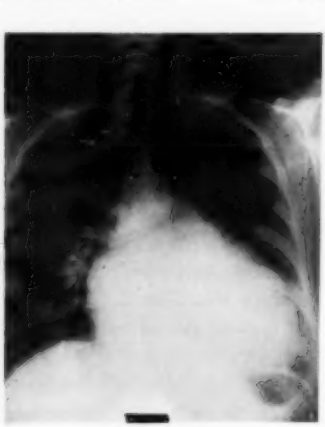
C - B, 1955

right ventricle with increased vascularity of the lungs. She underwent right heart catheterization in 1953. On August 31, 1955 she underwent surgery with findings of a defect measuring 2½ cm in diameter situated high in the atrial septum. Her electrocardiogram now shows normal ventricular complexes but a complete A-V dissociation with an atrial rate of 150 and a ventricular rate varying between 100 and 40.

"EB", the middle daughter, was twelve years of age at the time of study (1956). She exhibited no symptoms of heart disease, was mildly obese, and had normal exercise tolerance. She was studied because she showed an abnormal electrocardiogram taken at the same time as her older sister. Right heart catheterization was done in 1956. In 1957 she began complaining of repeated leg aches and increasing tiredness late in the day and at night. At that time she showed a systolic murmur best heard in the third and fourth left interspace with accentuation and splitting of the pulmonary second sound. A short diastolic sound was heard at the apex. X-rays showed an enlarged right ventricle with increased vascular markings of the lungs. Surgery was carried out on July 17, 1957 with findings of an atrial septal defect measuring approximately 2½ cm in diameter, located high in the septum. A recent electrocardiogram again showed a complete A-V block with a ventricular rate of 50, and an atrial rate of approximately 75, and there is now no evidence of right ventricular hypertrophy.



J - B, 1955



V - B, 1955

"JB", the youngest daughter, was eleven years of age at the time of study (1956). She had no history of cardiac difficulty but was routinely checked along with her sisters in 1954. She is moderately to severely obese. X-rays showed enlargement of the heart with increased vascularity of the lungs. Heart catheterization was done in 1956. Her diagnosis is atrial septal defect.

TABLE VI

E FAMILY (B) EKG FINDINGS

(at time of study)

	VB	CB	EB	JB
Ventricular rate	55	40	50	80
Rhythm	Atrial Fibrillation	A-V Diss.	A-V Diss.	Sinus
PR	—	—	—	0.26
QRS	0.06	0.08	0.08	0.06
Axis	R	R	L	R
Position	VH	VH	HH	VH
R. Chest	QR	rSA	RS	rSA
L. Chest	RS	RS	RS	RS

F FAMILY (P)

This family consists of the parents and three girls. All the children are affected.

"JP" was six years of age at the time of the study and gave a history of a heart murmur from birth. Exercise restriction was

not noted. A grade IV harsh systolic murmur was best heard in the pulmonary area and the pulmonary second sound was reduced. An electrocardiogram showed right ventricular hypertrophy and x-rays showed decreased vascularity of the lungs, enlargement of the right ventricle and main pulmonary artery. Right heart catheterization on March 13, 1957 revealed pulmonary valvular stenosis with severe right ventricular hypertension. She underwent pulmonary valvulotomy on May 27, 1957 with findings of a stenotic valve with a small triangular opening. No infundibular stenosis was found.

TABLE VII E FAMILY (B)

Right Heart Catheterization Findings

	VB	CB	EB	JB
Oxygen Saturation (Percent of capacity)				
SVC	72	70	57	56
IVC	—	67	67	59
RA	86	78	70	77
RV	86	77	72	76
PA	86	81	73	77
BA	95	87	89	91
LA	—	—	—	86a
LV	—	—	88a	—
Pressures (in millimeters of mercury)				
RA	12/5	6/2	4/1	3/0
RV	40/0	37/2	26/-3	17/0
PA	40/15	35/12	20/10	16/6
BA	150/75	132/82	118/73	107/66
LA	—	—	—	4/0a
LV	—	—	—	—

a-Catheter passed through atrial septal defect

"PP" was three years of age at the time of study and a heart murmur was heard for the first time at approximately two years of age. No exercise restriction was noted. There is a grade III to IV systolic murmur along the lower left sternal border and the pulmonary second sound is split but not accentuated. The electrocardiogram shows right ventricular hypertrophy and x-rays show increase in the cardiac size. She underwent right heart catheterization February 5, 1959 with findings of pulmonary valvular stenosis and moderate right ventricular hypertension.

"SP" was eleven years of age at the time of study and gave a history of a heart murmur being first heard at birth. No exercise difficulty is noted. A grade III systolic murmur is best heard in the second and third left interspace with normal splitting of the pulmonary second sound. The electrocardiogram and x-rays are within normal limits. The clinical diagnosis is mild pulmonary stenosis.

G FAMILY (S1)

This family consists of the parents and five children. One son and two daughters are affected.

"L.S1": A heart murmur was first heard at the age of 5 years. He is normal in growth and development but becomes easily fatigued and will squat following moderate exercise. A systolic murmur is heard in the pulmonary area with an absence of the pulmonary second sound. X-rays show an enlarged right ventricle and decreased vascularity of the lung fields; an electrocardiogram and vectorcardiogram show right ventricular hypertrophy. Heart catheterization (1960) shows pulmonary valvular stenosis with a right ventricular pressure of 95 mm Hg.

"B.S1" died in the immediate newborn period. Post mortem examination revealed a single ventricle and pulmonary valvular atresia.

"K.S1": A heart murmur was first heard at about 6 weeks of age. He is normal in growth and development and does not tire before others his age. A systolic murmur is best heard in the pulmonary area. X-rays show decreased vascularity of the lung fields; an electrocardiogram shows right ventricular hypertrophy. The clinical impression is pulmonary stenosis.

H FAMILY (L)

This family consists of the parents and three children. The affected members are the two girls who are twins. Each was three and a half pounds at birth, and the neonatal course was uneventful until three weeks of age. Twin 1 developed mild cynosis and a systolic murmur. The electrocardiogram showed right ventricular hypertrophy and the x-ray showed decreased vascularity of the lung fields. Twin 2 developed severe cynosis but no murmur was heard. The electrocardiograms and x-rays are similar. The clinical impression is that each of these children has tetralogy of Fallot.

I FAMILY (C)

This family includes the parents and four children. The three year old and the one month old are the affected members.

"JC" was two months of age when she was admitted to a hospital for a severe respiratory infection and a heart murmur was heard. She developed mild cyanosis on crying. A grade IV systolic murmur was best heard along the lower left sternal border, the second sound in the pulmonary area was accentuated and split, and systolic and diastolic murmurs were heard at the apex. The liver edge was always felt 3 cm below the right costal margin even when fully digitalized. The blood pressure in the right arm was 120/90. The electrocardiogram showed both left and right ventricular hypertrophy and prolongation of the PR interval. X-rays showed increased vascularity of the lungs, an enlarged heart with predominance of the right ventricle, and enlargement of the right and left atria. Right heart catheterization on December 4, 1958 revealed a large left-to-right shunt at the ventricular level, a systolic pressure in the pulmonary artery of 72, and no systemic arterial unsaturation at rest. She underwent ventricular septal surgery on May 28, 1960 with the findings of a ventricular septal defect 2 cm in diameter located behind the tricuspid valve and just beneath the aorta. Tricuspid valve insufficiency was also noted.

"SC" was eight months of age at the time of study and a heart murmur was heard for the first time at six weeks. Since delivery the child has shown normal growth and development, there have been no blue or fainting spells, and no difficulty in feeding. There is a grade IV systolic murmur best heard along the lower left sternal border and the second sound in the pulmonary area is accentuated and split. The liver edge is felt 4 cm below the right costal margin. The blood pressure in the right arm is 120/90. The electrocardiogram shows evidence of both right and left ventricular hypertrophy and a prolonged A-V conduction time. X-rays show an enlarged right ventricle and increased vascularity of the lung fields. This child probably has a ventricular septal defect, with tricuspid valve insufficiency.

J FAMILY (M)

This family includes the parents and five children. The 5 month old and the 7 year old are the affected members.

"KM" had a heart murmur first discovered at six weeks of age. No exercise restriction is noted. A grade IV harsh systolic murmur is best heard in the fourth and fifth left interspace along the left sternal border, and the second sound in the pulmonary area is accentuated and split. X-rays show an enlarged pulmonary

artery with increased vascularity in the lungs with left atrial enlargement. The electrocardiogram shows left ventricular hypertrophy. A left-to-right shunt was demonstrated at the ventricular level by heart catheterization.

"JM", who was five months of age at the time of the study, has a history of a murmur first having been heard at six weeks. She has no cardiac symptoms, and growth and development are within normal limits. A grade IV systolic murmur is best heard in the fourth left interspace and the second sound in the pulmonary area is slightly accentuated. The electrocardiogram shows left ventricular hypertrophy. An x-ray shows increased vascularity of the lungs, and enlargement of the heart. The clinical impression is ventricular septal defect.

K FAMILY (CO)

This family is different from all the other families reported in that the congenital defect in the two affected members is not similar. This family consists of the parents and three children. The father and the youngest child are affected.

"R.Co", the father, was first seen at twenty-one years of age for recurrent headaches and fainting spells with severe exertion. His legs tired easily and frequently became numb. A heart murmur was heard for the first time when he was twelve years of age and elevation of blood pressure noted at nineteen years of age. At twenty-one years he had a blood pressure of 180/105 in the upper extremities and less than 100 in the legs. The collateral arteries were visible and palpable. A grade III systolic murmur was best heard at the apex. X-rays showed bilateral rib-notching. On May 28, 1954 he underwent surgery for a coarctation.

"V.Co" was sixteen months of age at the time of this examination and a heart murmur was first heard at fifteen months. A grade IV systolic murmur was best heard in the second left interspace and the second pulmonary sound was decreased. No blood pressure abnormalities were noted. An electrocardiogram showed right ventricular hypertrophy and x-rays showed enlargement of the heart with prominence of the right ventricular chamber. These clinical findings indicated pulmonary stenosis.

CONCLUSION

This report summarizes some of the literature covering multiple occurrence of congenital heart defects occurring in families.

Approximately 200 such families are reported in the literature. In this study and in previously reported cases, it is noted that females are predominantly affected. Eleven families were studied which included sixty-seven individuals in the immediate families with twenty-five affected members. Each affected member was studied clinically while some underwent right heart catheterization and several surgery. One family is especially noteworthy in that all female members have a similar physical build, cardiac physical findings, electrocardiographic findings, and similar positions of the atrial defect within the heart.

No attempt has been made by previous authors to determine the percentage of familial occurrence of congenital defects compared to the total number of families in which a congenital cardiac defect may occur. In Abbott's cases, eleven families out of 850 cases approximately, the percent would be 1.3; in Lamy, deGrouchy and Schweisguth cases, seven to thirty families out of 1,188 patients, the percent would be 0.6 to 2.5. It is the author's estimate that the cases reported equal approximately 1 percent of families seen during the nine year period.

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The Relationship Between the Epilepsy of Cerebral Palsy and the Electroencephalogram

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THE purpose of this work is to present the problem of complicated cerebral palsy[1,2,3,4,5] and its relationship to epilepsy, electroencephalography, mental defect and surgical pathology.

Complicated cerebral palsy has been defined by me as non-familial paralysis or paresis with epilepsy or mental deficiency or both, manifesting itself early, usually before the end of the first year.

In this series of cases, 142 children between the ages of 6 months and 13 years—76 male and 66 female—were reviewed. Epilepsy was found to be present in 110 patients of whom 56 had electroencephalography performed and 7 patients had repeat electroencephalography done. Mental defect was also found to be present in 135 patients. Craniotomy was performed on 68 patients.

These children showed the following clinical signs: (1) Cerebral paralysis or paresis, usually of all four limbs, of spastic or athetotic type. (2) Inability to hold the head up or sit up. (3) Mental defect. (4) Strabismus in one or both eyes. (5) Amblyopia. (6) Drooling of saliva in about 50% of cases. (7) Difficulty in swallowing. (8) Difficulty in respiration with stertorous breathing. (9) Epilepsy which may be of the pyknotic variety, Petit Mal, focal or generalized type.

Epilepsy: Of the 110 children who suffered from some form of epilepsy, 56 patients had electroencephalography performed. 49 children had one E.E.G. and 7 had repeat E.E.G. performed. The epileptics were divided into 5 groups: (1) Grand Mal—68. (2) Petit Mal—10. (3) Grand Mal and Petit Mal—12. (4) Jacksonian Epilepsy with Grand Mal—18. (5) Jacksonian Epilepsy with Petit Mal—2.

Electroencephalography: 56 patients underwent electroencephalography. (1) 49 had one E.E.G. performed. All 49 patients showed a generalized abnormality. (2) Repeat E.E.G.: (a) 3

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patients with Jacksonian and Grand Mal attacks showed focalization on initial and repeat electroencephalography. (b) One patient with Grand Mal showed a consistent generalized abnormality. However, this abnormality was more severe in the second electroencephalogram. (c) Three children showed a consistent, gross abnormality, both on initial and repeat electroencephalography.

Mental Defect: (1) 91 patients showed severe mental defect. (2) 23 patients showed moderate mental defect. (3) 21 patients showed mild mental defect. (4) 7 children showed no mental defect, however, these patients were cerebral palsied and epileptic. [The total number with mental defect in this series was 135.]

Surgical Pathology: 68 children had craniotomy performed with the following findings: (1) Bilateral craniotomy was performed in 5 children. Of these, 1 patient showed a bilateral angioma at the lower angle of the sylvian fissure; 1 patient showed a bilateral arachnoiditis; and the other 3 showed an angioma in the region of the left sylvian fissure. (2) Left-sided angioma was found in 48 children on whom unilateral craniotomy was performed. (3) Right-sided angioma was found in 15 children on whom unilateral craniotomy was performed. (4) One child had an arachnoiditic cyst of the fourth ventricle. (5) Porencephaly with left-sided angioma was found in one child. (6) Microcephaly was found in 3 patients.

The pathology was in the region of the lower angle of the sylvian fissure in every patient who showed angiomatous formation. The angioma was of the arteriovenous type, with the thin arteries running in the wall of the enlarged venous channels. The angioma could be found in the form of a lake, or a varicosity, a stellate configuration or a circular sinus. The angioma was found to be present in 63 of the 68 patients who came to craniotomy.

It is important to note that if an observer should attempt to find this pathology post-mortem, one of the following methods must be used: (1) The brain should be viewed only after the head has been in a dependent position for a prolonged period. (2) After the head has been frozen in a dependent position. (3) Or, after the venous channels have been filled with a contrast medium post-mortem. Otherwise, these thin-walled angiomatous formations collapse and give the appearance of thickened arachnoidal tissue. This has been the cause of the inability of pathologists to find and describe this abnormal state heretofore.

In every patient it was found at surgery that the dura mater was thickened, that the meningeal vessels were enlarged and varicose, and that there were arachnoiditic adhesions between the dura mater and the angiomatous area. In 3 cases, the dura was actually adherent to brain by thick adhesions, and in 2 cases temporal fracture of the skull resulted in a portion of the inner table being incorporated in the scar tissue.

In previous papers[1,2,3,4,5] by the author dealing with this subject, it was pointed out that the surgical removal of the pathology resulted in improvement in motor power, diminished spasticity, increased cerebration and complete or marked improvement in the frequency and severity of the epileptic attacks.

It is also true that the children who were accurately diagnosed and operated upon within the first year of life, in many cases, developed to be "normal" children. This was especially true in one patient with microcephaly.

SUMMARY AND CONCLUSIONS

The foregoing facts show:

(1) That there can be no cerebral palsy without cerebral pathology.

(2) That the most common pathology in complicated cerebral palsy is to be found in the region of the left pterion in the form of an arteriovenous angioma with arachnoiditis.

(3) That other forms of pathology, such as microcephaly, posterior fossa cyst, or cerebral scar, may be the cause of complicated cerebral palsy.

(4) That despite the local pathology, the electroencephalogram in almost every case shows a generalized abnormality. It is my belief that this abnormality is due to hypoxia of the brain because of defective vascularization.

(5) That these foregoing facts do not warrant a negativistic approach to the problem of complicated cerebral palsy, but rather a courageous and definitive one.

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Effects of a Highly Absorbable Fortified Vitamin Formula on Appetite and Growth in Children

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THE VALUE of vitamins B_1 and B_{12} in promotion of appetite and physical growth has been extensively documented in reports of studies on animals and humans.[1-7] These materials are now in widespread use for this purpose and exert beneficial effects in a significant percentage of cases. We have used them extensively in our clinics for a number of years, either singly or together in varied combinations of dosages, and in certain selected cases, in conjunction with small doses of tranquillizers.[8] We have had, as have others, a fair degree of success with these preparations.

We have noted, as did Wetzel[5] and associates, a significant number of children in high income families where there is apparently intelligent dietary planning, who have exhibited a type of anorexia and growth failure which responds to substantial doses of vitamin B_1 and vitamin B_{12}. Such results can most logically be explained by a subclinical type of B_1 and B_{12} deficiency. In those cases with adequate intake, the difficulty is usually poor utilization based on poor absorption or some interference in intermediate metabolism. The theory has been advanced that the many specific factors constituting the vitamin B complex function best in conjunction with each other, an analogous situation to that occurring in the synthesis of proteins from amino acids, where ideal synthesis requires the presence of all the amino acids in proper portions at the same time.

We were therefore interested in testing the efficiency of a new vitamin preparation which provides all essential vitamin factors in the proportions suggested by the National Institute of Health, plus substantial additional amounts of vitamins B_1 and B_{12}, and D-Sorbitol, the latter a proven absorption enhancement factor for vitamins B_1 and B_{12}.[9,10]

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This product seemed to us to have certain properties which would be of special value in those cases of anorexia and growth retardation in which a balanced diet was present and we, therefore, planned a long-range study to test its efficacy.

MATERIALS AND METHODS

The preparation* used provides the following per teaspoonful:

Vitamin B_{12}	10 mcg.
Thiamine Hydrochloride	10 mg.
Niacinamide	6.67 mg.
Riboflavin	0.67 mg. (as 5' phosphate)
Pyridoxine Hydrochloride	0.167 mg.
Vitamin A (as palmitate)	1667 USP Units
Vitamin D (calciferol)	134 USP Units
Folic Acid	0.084 mg.
Panthenol	1.67 mg.
D-Sorbitol	2.33 gm.

Children between the ages of 3 and 12 with complaints of poor appetite or failure to gain and/or grow properly were accepted on a preliminary basis for the study. Conventional procedures were used to establish that the child was not, at the time, suffering from any overt organic disease. No attempt was made to evaluate emotional factors in this study.

Only children at least 10% below mean weight for their age were included. Also, as in our usual procedure, all parents were interviewed; children were not included in this study if the parents were thought to be unreliable insofar as following instructions with medications and diet was concerned.

The Diatetics Department was asked to make three-day nutritional analyses of the usual diets of all these children to insure their adequacy. No attempt was made to change the diets in any way, but all children on inadequate diets were eliminated from the study.

Moreover, parents were cautioned to make no change in the diet or to indicate in any way that the preparation being given was for appetite promotion. It was described to the children, on inquiry, as a medicine to "strengthen their blood." The drug was administered to all patients in a dosage of one teaspoonful, three times daily after meals.

*Kindly furnished as Somatozyme® liquid by the Medical Department of The Purdue Frederick Company, New York, N. Y.

Three groups were established: One group consisting of twenty-five children was not given any medication for the first eight weeks and then was switched to the multivitamin preparation for a similar period. Another group of forty children was divided into two random groups through the "double blind" technique, one group receiving the active preparation for 16 weeks and the 'control' group receiving placebo therapy for the same period of time. Both groups were then evaluated at four-week intervals and comparative results in weight and appetite were obtained. After the study had progressed for four months, a third group was formed of those children from the first group who had reacted well to the medication. This group was then studied under varying conditions for another four months.

RESULTS

The first group of twenty-five children were used as their own control.

After the group was selected, they were examined at four-week intervals. During the first eight weeks, no medication was given, but the children were weighed and examined, and the parents questioned to obtain a subjective evaluation of the children's appetites. During the second eight weeks, the vitamin preparation was given in the dosage previously stated. The results are presented in Tables I, II and III, and Figure A.

In this group of twenty-five children, twelve can be said to have shown some type of favorable reaction to the medication.

Five cases (2, 7, 8, 14, and 16) showed an excellent response in respect both to appetite improvement as subjectively evaluated by the parents, and a significant weight gain as compared to the control period. Significant weight gains are defined by us as a rate greater than four pounds a year, this being approximately the average minimum weight gain per year in normal children of this age group. Three cases exhibited a fair response, demonstrating a significant weight gain, but none reported appetite increase (cases 10, 18, and 20).

Four cases showed a slight response reporting some increase in appetite, but no weight gain (cases 4, 5, 9, and 11).

The second group of forty children was divided into two equal segments using the "double blind" technique. One was placed on the vitamin preparation and the other received a similarly flavored

TABLE I

COMPARISON OF WEIGHTS AND APPETITES DURING EIGHT WEEKS WITHOUT MEDICATION AND EIGHT WEEKS OF MULTIVITAMIN THERAPY

				BEFORE TREATMENT NO MEDICATION					MULTIVITAMIN THERAPY				
				Four Weeks		Eight Weeks			Twelve Weeks		Sixteen Weeks		
Case	Name	Age*	Race & Sex	Wt.	A	Wt.	A	Weight Gain Or Loss	Wt.	A	Wt.	A	Weight Gain Or Loss
1.	M.I.	5	W. M.	34	3	34	3	--	34	3	34 1/2	3	+ 1/2
2.	O.W.	4 1/2	W. M.	29	3	29	3	--	29 1/2	2	30	1	+ 1
3.	J.F.	3	W. F.	23 1/2	3	23 1/2	3	--	23 1/2	3	23	3	- 1/2
4.	H.N.	8	W. M.	46	3	46	3	--	45 1/2	3	46	2	--
5.	W.K.	11	W. M.	67	3	67	3	--	67	3	67	2	--
6.	H.M.	8	W. F.	30	3	30 1/2	3	+ 1/2	30 1/2	3	30 1/2	3	--
7.	H.G.	6	W. M.	37	3	37	3	--	38	1	38 1/2	1	+ 1 1/2
8.	R.G.	3 1/2	W. F.	26	3	26	3	--	27	1	27	1	+ 1
9.	B.R.	4	W. M.	26	3	26	3	--	26	2	26 1/2	2	+ 1/2
10.	P.H.	2 1/2	C. M.	22	3	22 1/2	3	+ 1/2	22 1/2	3	23 1/2	3	+ 1
11.	W.W.	7	W. F.	43	3	43	3	--	43	2	43	2	--
12.	H.E.	5	W. M.	32	3	32	3	--	32 1/2	3	32	3	--
13.	R.B.	5	W. F.	34	3	34	3	--	33	3	33	3	- 1
14.	H.B.	9	W. F.	56 1/2	3	56	3	- 1/2	57	1	58	1	+ 2
15.	R.N.	5	W. M.	33	3	33 1/2	3	+ 1/2	33	3	33 1/2	3	--
16.	J.H.	4	W. F.	25 1/2	3	25 1/2	3	--	27	1	28	1	+ 2 1/2
17.	J.B.	5	W. F.	27 1/2	3	27	3	- 1/2	27	3	26 1/2	3	- 1/2
18.	J.J.	6	W. M.	39	3	39 1/2	3	+ 1/2	39 1/2	3	40	3	+ 1/2
19.	J.F.	5	W. M.	31	3	31	3	--	31 1/2	3	31	3	--
20.	H.P.	6	W. M.	37	3	37	3	--	38	3	38 1/2	3	+ 1 1/2
21.	B.B.	8 1/2	W. M.	50 1/2	3	50	3	- 1/2	50	3	50 1/2	3	+ 1/2
22.	J.O.	5	C. F.	31	3	31	3	--	29 1/2	3	30	3	- 1
23.	P.P.	6	W. M.	37	3	37	3	--	37	3	37 1/2	3	+ 1/2
24.	B.P.	4 1/2	W. M.	27	3	27	3	--	27 1/2	3	27 1/2	3	+ 1/2
25.	W.Z.	5	W. F.	33	3	33	3	--	33	3	33 1/2	3	+ 1/2

*Age is taken to the nearest half year

A - Appetite subjectively rated as 1 - Good
2 - Fair
3 - Poor

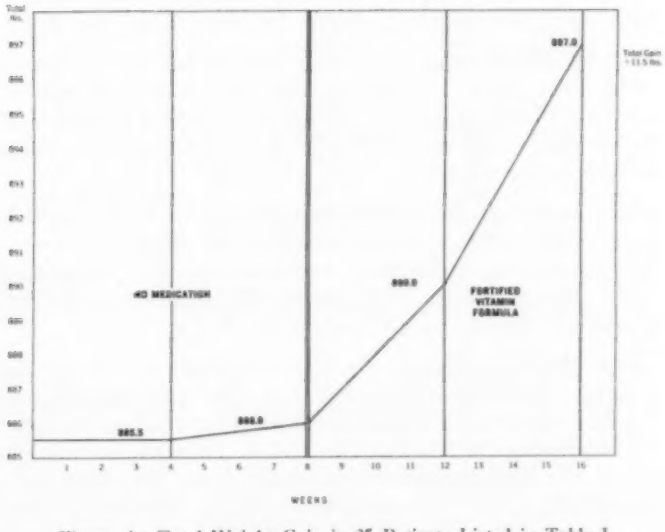

Figure A: Total Weight Gain in 25 Patients Listed in Table I

TABLE II

ANALYSIS OF WEIGHT GAINS IN 25 PATIENTS LISTED IN TABLE I

	Changes In Weight		
	Gain	Unchanged	Loss
Eight Weeks No Medication	4	18	3
Eight Weeks Fortified Vitamin Formula	15	6	4

TABLE III

ANALYSIS OF EFFECTS ON APPETITE IN 25 PATIENTS LISTED IN TABLE I

	Effect On Appetite		
	Good	Fair	Poor
Eight Weeks No Medication	0	0	25
Eight Weeks Fortified Vitamin Formula	5	4	16

placebo solution containing only a sweetener and a synthetic flavor. All patients were observed for twelve weeks, and examined every four weeks.

The results were tabulated and are presented in Table IV. Eleven children in the vitamin-treated group showed favorable results. Of these, the responses of five were excellent, with good subjective appetite increase and significant weight gains in excess of one pound for the period under study (cases 3, 9, 10, 17, and 18). Others showed appetite improvement but no significant weight gain (cases 4, 7, and 13). Case 6 showed fair appetite improvement and significant weight gain and cases 11 and 20 showed significant weight gain and no appetite improvement.

In the group that received the placebo, in sharp contrast, only one child (case 5) showed a significant weight gain in excess of one pound. Ten children demonstrated a transient appetite improvement, which had disappeared within the next examination period.

The third study group was formed from the ten children, five in Group I and five in Group II, who had demonstrated the best results on the active preparation. These were divided completely at random into two groups of five each and were studied for a sixteen-week period according to a "cross-over" plan.

The first group of five received the placebo solution for the first eight weeks and the vitamin preparation for the second eight weeks. The second group received the multivitamin preparation for the first eight and the placebo for the following eight weeks. The results are presented in Tables V and VI, and Figure B.

Four of the five children who received the placebo first demonstrated no significant improvement (case 2 had a transient appetite increase) but by sharp contrast, manifested good increase in appetite and weight gain after they were given the active preparation. Case 4, who had responded well originally, in her first trial made no response this time to either placebo or vitamin, although her appe-

TABLE IV (CONTINUED)

GROUP II

PLACEBO

Case	Age	Race & Sex	0 Weeks W	0 Weeks A	4 Weeks W	4 Weeks A	8 Weeks W	8 Weeks A	12 Weeks W	12 Weeks A
1. D. K.	4	W. F.	29	3	29	1	29 1/2	2	29 1/2	3
2. S. J.	5 1/2	W. F.	35	3	35	3	35	3	35 1/2	3
3. M. C.	6 1/2	W. M.	43	3	43	2	43	3	43	3
4. A. B.	6	W. M.	39	3	39 1/2	3	39 1/2	3	39 1/2	3
5. B. K.	5	W. M.	33	3	33	1	33 1/2	3	34 1/2	3
6. R. R.	6 1/2	C. M.	41	3	40 1/2	3	41	3	41	3
7. B. B.	4 1/2	C. F.	30	3	30 1/2	2	30 1/2	3	31	3
8. O. J.	8	W. M.	45	3	45	3	45	3	45	3
9. W. A.	9	W. M.	57	3	57	2	57	2	57	3
10. A. F.	3	W. M.	23	3	23	3	23 1/2	3	23 1/2	3
11. S. I.	4	W. F.	29	3	29 1/2	2	30	2	30	2
12. J. J.	6	W. F.	37	3	37	1	37	3	37	3
13. J. S.	7	W. M.	41	3	41	3	41	3	41	3
14. S. B.	5	W. F.	33	3	33	3	33 1/2	2	33 1/2	3
15. F. I.	7	C. M.	41	3	41	3	41 1/2	3	41	3
16. B. C.	5	W. F.	34	3	35	1	35 1/2	1	35	3
17. C. G.	6	W. M.	40	3	40	3	40	3	40 1/2	3
18. J. M.	5	W. F.	34	3	34	2	34	3	34 1/2	3
19. K. S.	5	W. F.	32	3	32	3	32 1/2	3	33	3
20. P. G.	7	W. M.	42	3	42	1	42	2	42	3

TABLE IV

"DOUBLE BLIND" COMPARISON IN CHANGES OF WEIGHT AND APPETITE OF TWO GROUPS TREATED WITH PLACEBO OR ACTIVE MEDICATION

GROUP I

FORTIFIED VITAMIN FORMULA

Case	Age	Race & Sex	0 Weeks W	0 Weeks A	4 Weeks W	4 Weeks A	8 Weeks W	8 Weeks A	12 Weeks W	12 Weeks A
1. A. R.	3	W. F.	23	3	23	3	23 1/2	3	23 1/2	3
2. J. C.	5 1/2	C. M.	34 1/2	3	34	3	34	3	34	3
3. A. B.	4 1/2	W. F.	31	3	31 1/2	2	32	1	32 1/2	1
4. J. J.	7	W. M.	42	3	42 1/2	3	42	2	42 1/2	2
5. B. S.	6	W. F.	37	3	36 1/2	2	37	3	37	3
6. M. I.	4	W. F.	30	3	30	3	31	2	31 1/2	2
7. J. B.	9	W. F.	54	3	54	3	54	2	54	2
8. A. F.	6	W. M.	36	1/2 3	36	3	35 1/2	3	36	3
9. I. A.	6	1/2 C. F.	39	3	39	1/2 1	40	1	41	1
10. F. A.	7	1/2 W. M.	43	3	44	1	44	1	44	1/2 1
11. S. M.	4	W. M.	26	3	26	3	27	3	27	1/2 3
12. F. M.	6	W. F.	40	1/2 3	40	3	40	3	40	1/2 3
13. D. W.	7	W. M.	42	3	42	3	41	1/2 2	42	2
14. R. S.	9	1/2 W. M.	59	3	59	3	59	1/2 3	59	1/2 3
15. D. D.	4	W. F.	30	3	30	3	30	3	30	1/2 3
16. J. H.	3	W. M.	24	1/2 3	24	1/2 3	24	1/2 3	25	3
17. D. H.	5	W. F.	32	3	32	1/2 1	33	1	33	1/2 1
18. E. S.	4	1/2 C. F.	26	3	26	2	26	1/2 1	27	1/2 1
19. D. M.	5	1/2 W. F.	34	1/2 3	34	3	34	3	34	1/2 3
20. T. H.	6	W. M.	39	3	39	3	39	1/2 3	40	1/2 3

W - Weight
A - Appetite subjectively rated as 1 - Good
2 - Fair
3 - Poor

TABLE V

RESULTS OF "CROSS-OVER" STUDY IN TEN PATIENTS OVER A SIXTEEN WEEK PERIOD*

PLACEBO - FORTIFIED VITAMIN FORMULA

				PLACEBO SOLUTION							FORTIFIED VITAMIN FORMULA				
				Before **Treatment		Four Weeks		Eight Weeks			Twelve Weeks		Sixteen Weeks		
Case	Name	Age	Race & Sex	Wt.	A	Wt.	A	Wt.	A	Weight Gain Or Loss	Wt.	A	Wt.	A	Weight Gain Or Loss
1.	H.G.	6	W. M.	38	3	38	2	38	3	--	39	1	38 1/2	2	+ 1/2
2.	D.H.	5	W. F.	33 1/2	3	33 1/2	3	33 1/2	2	--	33 1/2	1	34 1/2	1	+ 1
3.	I.A.	6 1/2	C. F.	40 1/2	3	40	3	40	3	- 1/2	40 1/2	2	41	2	+ 1/2
4.	A.B.	4 1/2	W. F.	32 1/2	2	32 1/2	2	35	2	+ 1/2	33	2	33	2	--
5.	E.S.	4 1/2	C. F.	27 1/2	3	27	3	26 1/2	3	- 1	27	2	27 1/2	1	+ 1

FORTIFIED VITAMIN FORMULA - PLACEBO

				FORTIFIED VITAMIN FORMULA							PLACEBO SOLUTION				
				Before **Treatment		Four Weeks		Eight Weeks			Twelve Weeks		Sixteen Weeks		
Case	Name	Age	Race & Sex	Wt.	A	Wt.	A	Wt.	A	Weight Gain Or Loss	Wt.	A	Wt.	A	Weight Gain Or Loss
1.	F.A.	7 1/2	W. M.	44	2	44	2	44	3	--	44	3	44 1/2	3	+ 1/2
2.	H.G.	3 1/2	W. F.	27	3	27	1	27	1	--	28	3	29	3	+ 1
3.	J.M.	4	W. F.	27 1/2	3	28	2	28 1/2	2	+ 1	28 1/2	3	28	3	- 1/2
4.	G.W.	4 1/2	W. M.	30	3	30 1/2	1	30	3	--	30 1/2	2	30 1/2	3	+ 1/2
5.	H.B.	9	W. F.	58	3	58	2	58	2	--	58	2	58	3	--

* See text for explanation

** Weight and appetite at commencement of "Cross-Over" Study after a two-week interval without medication.
A - Appetite subjectively rated as 1 - Good
2 - Fair
3 - Poor

tite which had improved after the initial trial continued to be fairly good.

In the second half of this trial, three of the five children who first received the vitamin preparation showed good results following a decrease in appetite after they were given the placebo. The other two children showed varied responses, case 4 exhibiting a transient increase in appetite during the first four-week period. Case 5 showed little response either to placebo or drug. Both of these cases had responded well originally to the multivitamin.

DISCUSSION

Without attempting to evaluate the many causes of anorexia and associated growth failure, and speaking purely in an empirical manner, it seems fair to state that the results of this study, as well as of preceding ones, demonstrate that a significant number of anorexic

TABLE VI

SUMMARY OF TABLE V, CHANGE OF WEIGHT IN "CROSS-OVER" STUDY

Placebo—Fortified Vitamin Formula	Gain	No Change	Less	Fortified Vitamin Formula—Placebo	Gain	No Change	Less
Placebo (Eight Weeks)	1	3	1	Fortified Vitamin Formula (Eight Weeks)	2	2	1
SWITCH				SWITCH			
Fortified Vitamin Formula (Eight Weeks)	4	1	0	Placebo (Eight Weeks)	1	3	1

children respond with increased appetite and weight gain to vitamin supplements rich in vitamins B_1 and B_{12}. Our results, which revealed excellent responses in 20% and favorable responses in 48%, are somewhat higher than the average findings with vitamins B_1 and B_{12} alone.[3,11] This can possibly be attributed to the better absorption of this product, due to the presence of D-Sorbitol and the synergistic action of the other vitamin factors present.

The second study group confirms the validity of the findings in the first group through another type of controlled technique, the placebo method. Here, very good results were achieved in 25% and moderate benefits in 55% of the cases. The third part of the study demonstrated rather strikingly that these responses were directly due to the vitamin supplement itself since other variables were neutralized.

CONCLUSIONS

1. Significant appetite improvement and weight gain while on a specially formulated vitamin preparation rich in vitamins B_1 and B_{12} containing D-Sorbitol (Somatozme) was evidenced in twenty to twenty-five per cent of the children with anorexia and growth failure of various causes.

2. Some improvement either in appetite or weight gain was evidenced in forty-eight to fifty-five per cent of the children taking this preparation in the study.

3. By means of a double-crossover technique, it was demonstrated that the favorable responses were due to treatment with the fortified vitamin formula, rather than the random effect of variables.

4. It was postulated that these results which appear to be more pronounced than from use of vitamins B_1 andB_{12} alone, may be ettributed not only to the presence in the multivitamin preparation

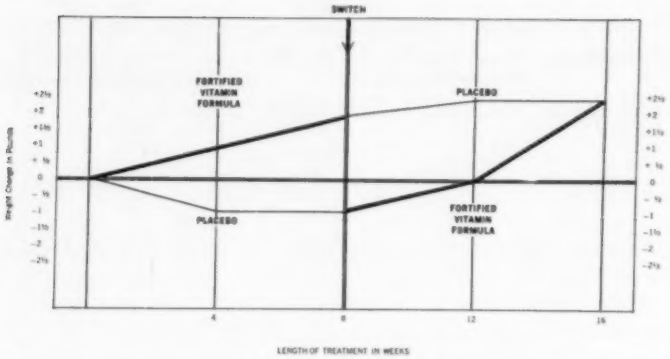

Figure B: Mean Weight Against Time of Two Groups in "Cross-Over" Study Listed in Table V

of D-Sorbitol (which is known to enhance the absorption of certain vitamins), but also to the possibly synergistic effect of the many other vitamins.

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7 Lexington Ave., New York 10

Proceedings of the New York City Poison Control Technical Advisory Committee Meeting

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HARRY W. RAYBIN, M.S.**
New York

IN ORDER to assist the New York City Poison Control Center in developing standards for the management of chemical poisonings and to consider and make recommendations for the treatment, control and prevention of poisonings, a technical advisory group of experts in this field was assembled soon after the establishment of this Center. The membership of this advisory committee is as follows:

Oscar Bodansky, M. D., committee chairman, Memorial Center for Cancer and Allied Diseases, New York City; Bradford N. Craver, M. D., Chief, Pharmacology Division, Squibb Research Institute, New Brunswick, New Jersey; Bernard Davidow, M. D., Director of Pharmacology, New Drug Institute, New York City; A. Haldane Gee, Ph.D., Director, Bacteriology and Toxicology, Foster D. Snell, Inc., New York City; Horace W. Gerade, M. D., Head Toxicologist, Esso Research Laboratories, Linden, New Jersey; Leonard Greenburg, M. D., Professor of Preventive and Environmental Medicine and Chairman of the Department, Albert Einstein Medical School, New York City; Milton Helpern, M. D.,

* Assistant Commissioner for Maternal and Child Health, Department of Health, City of New York
**Technical Director, Poison Control Center.

(ex-officio), Chief Medical Examiner, New York City; Irvin Kerlan, M. D., Chief, Research and Reference Branch, Bureau of Medicine, U. S. Food and Drug Administration; Morris Kleinfeld, Acting Director, Division of Industrial Hygiene, New York State Department of Labor; Harold Lederer, Ph.D., R. M. Hollingshead Corp., Camden, New Jersey; May R. Mayers, M. D., formerly Assistant Director, Division of Industrial Hygiene, New York State Department of Labor; Barbara Parker, M. D., Assistant Professor, Department of Medicine, New York University College of Medicine, New York City; Morton Rodman, M. D., Chairman, Department of Biological Sciences, Rutgers College of Pharmacy, Newark, New Jersey; and William G. Van der Kloot, Ph.D., Chairman, Department of Pharmacology, New York University Medical Center, New York City.

Following are the proceedings of the meeting of the Committee held on April 19, 1961, at 2 P.M., at the New York City Department of Health, with Dr. Bodansky presiding as chairman.

ACTIVITIES OF THE POISON CONTROL CENTER IN 1960

Harold Jacobziner, M. D. summarized the poison control activities in New York City in 1960. He indicated that nearly 11,000 cases were reported during the year (see Chart I). Although the number represented in this chart shows only a little over 10,000, there was a considerable backlog of cases which were not included in the tabulation because of delayed reporting. By major categories, aspirin and barbiturates were the chief offenders at all ages and, together, responsible for 21% of all poisonings at all ages, with aspirin heading the list.

Nearly 44,000 poisonings have been reported to the Center since its establishment five and a half years ago. Dr. Jacobziner stressed that this is only just a fragment of the actual number of such cases; although it is required that poisonings be reported, there is good reason to believe that the reporting is incomplete. Before the Center was established not more than 50 poisoning cases were reported annually. Continuing education, Dr. Jacobziner noted, is of primary importance in getting physicians to more completely report such incidents. The 11,000 poisonings reported in 1960 represent events which made it necessary for the physician to obtain some information either on management or toxic ingredients, or both. However, this total is probably not more than one-fifth of the actual occurrence or perhaps less than that, since these events are so much under-reported.

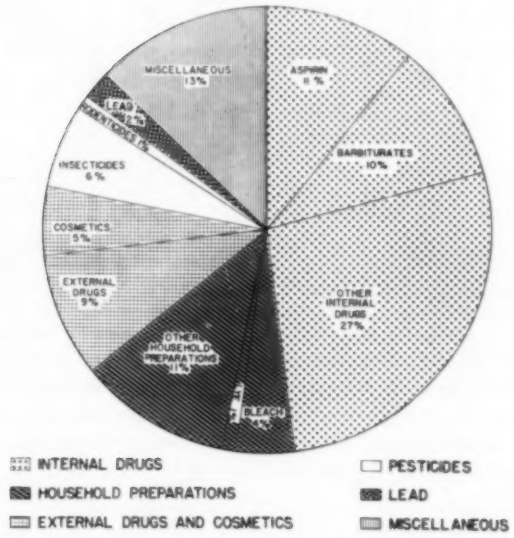
CHART I

POISON CONTROL CENTER

NEW YORK CITY DEPARTMENT OF HEALTH

PERCENTAGE DISTRIBUTION OF 10,103 CASES OF POISONINGS

(REPORTED) BY TYPE OF POISON – 1960



Dr. Jacobziner related that barbiturates are the chief offenders at all ages, with aspirin following close behind, barbiturates being responsible for 14% of all poisonings and aspirin 10%. The picture changes in individuals under 20 years of age, with aspirin responsible for 15% of all poisonings and barbiturates only 2% in this age group. At all ages, barbiturates are used with suicidal intent as well as in sleeping doses. In the under 20 years of age group, barbiturate and aspirin poisonings represent merely accidental ingestions and, aspirin being far more available to this group than barbiturates, becomes the chief offender. It is also interesting that of all poisonings in this group, 85% occur in children between the ages of 0-5.

It is realized, Dr. Jacobziner said, that perhaps thousands of products are represented in poisonings and each comes in dozens of brands. Physicians can well throw up their hands and say: "What

TABLE 1
POISON CONTROL CENTER
NEW YORK CITY DEPARTMENT OF HEALTH
POISONINGS BY AGE
1960

Type of Poison	Total	Under 1 Year	1	2	3	4	5-9	10-14	15-19	20 and Over	Age Unknown: Child	Age Unknown: Adult	Age Unknown: Not Specified
Internal Medicines	1,881	44	260	745	536	180	111	64	350	2,275	42	74	95
Aspirin	1,059	11	64	388	280	89	21	24	91	150	15	2	12
Barbiturates	1,000	2	17	18	12	4	5	9	57	833	0	26	15
Other	2,764	31	182	429	236	93	85	31	250	1,295	27	47	64
External Medicines	871	60	145	169	75	43	31	14	58	244	10	14	18
Cosmetics	526	21	138	200	44	12	7	7	10	18	10	12	5
Household Preparations	1,245	38	331	316	101	48	42	20	53	251	14	25	22
Bleaches	420	9	91	94	40	11	14	7	36	104	1	7	4
Lye	150	1	28	37	15	10	6	0	0	36	1	4	6
Other	695	28	212	185	46	19	22	13	21	113	12	14	12
Solvents	395	13	110	108	24	13	11	10	14	73	4	11	14
Turpentine	94	7	30	28	9	5	2	2	4	7	0	0	0
Kerosene	29	1	11	5	1	0	1	0	1	2	0	0	1
Other	272	5	69	64	14	8	8	8	9	62	4	11	11
Insecticides	580	28	147	147	59	21	18	5	26	85	14	17	13
Rodenticides	140	5	45	31	16	4	5	2	3	21	3	2	3
Miscellaneous	1,525	103	303	282	160	73	107	29	34	154	31	33	38
Lead	185*	4	45	79	30	10	10	0	0	4	2	0	1
Other	1,340	99	258	203	130	63	97	29	34	150	29	33	37
TOTAL	10,109	312	1,550	2,098	1,054	398	334	153	648	3,122	128	186	190
PERCENT	100.0	3.1	15.4	20.7	10.2	3.9	3.3	1.5	6.0	30.9	1.3	1.8	1.9

* This total includes possible lead poisoning cases.

can we do about it? We can't possibly know how to manage every case and what precautions to take against every product". But, even taking into account the great number of hazardous products, if the most elementary precautions are employed with regard to the five leading offenders—aspirin, bleaches, lead, barbiturates and lye—over 30% of all poisonings would be eliminated.

According to age, 2 years is a highly susceptible age as far as poisonings in children are concerned. Under 20 years of age, 21% of all poisonings occur in children at age 2; another 15-odd per cent at age one; and 10% at age 3. Eighty-five (85%) of all poisonings in individuals under 20 occur in children under 5 years of age. (See Table 1).

Lead poisoning, Dr. Jacobziner noted, causes much concern in New York City. In 1960, there were 144 confirmed cases, 34 possible cases, and 18 deaths. (See Table 2). Sharpened diagnostic and case finding devices have reduced the lead poisoning case fatality rate from 16% in 1955 to 7% in 1960. A greater number of cases are being found in the asymptomatic stage in their incipiency when more effective treatment is possible.

It is now known, Dr. Jacobziner stated, how more effectively to find cases, how to treat them, but not how to prevent them although they are entirely preventable. In a review of cases occurring in New York City, it was found that every case occurred either as a

TABLE 2

LEAD POISONING CASES*

1960

Under 20 Years of Age

Race and Sex	Under 2 Years	2 Years	3 Years	4 Years	5 Years	6 Years & Over	Child Age Unknown	Total
White								
Male	-	6	-	-	-	-	-	6
Female	2	4	1	-	-	-	-	7
Non-White								
Male	14(a)	19(c)	7(a)	2	-	-	-	42
Female	7(a)	17(b)	5	1	1	-	-	31
Puerto Rican								
Male	13(b)	18(c)	4	3	2(a)	-	1	43
Female	7	23(b)	5(a)	4	3	3	-	45
Race Unspecified								
Male	1	1	-	-	-	-	1	3
Female	-	-	-	-	-	-	1	1
TOTAL	44	88	24	10	6	3	3	178

*Of the total number of lead poisoning cases shown, 144 were confirmed and 34 were possible cases; included are 16 fatalities.

(a) Includes 1 fatality (b) Includes 2 fatalities (c) Includes 3 fatalities (d) Includes 4 fatalities

result of chewing painted plaster and/or peelings from ceilings or window sills. In children, all lead poisonings occurred in individuals under 6 years of age, with 75% of such poisonings appearing in Puerto Ricans and negroes. Dr. Jacobziner pointed out that it is not believed that the negro or Puerto Rican child is more susceptible to the ravages of lead poisoning, but rather that the determining factor is socio-economic. In these two groups, many live in houses of substandard condition—walls covered with five, six and seven coatings of paint, often with high lead content—even though the New York City Health Code for the past 20 years provided that paint used on indoor surfaces must not contain more than 1% of lead. However, many coatings were applied prior to this period; it is also possible that many tenants paint their apartments themselves and purchase paint with high lead content actually intended for outdoor use.

In the child health stations, Dr. Jacobziner added, which are attended by about one-third of all infants and 22% of all preschool children in New York City, whenever a child comes in with a history of pica, he, as well as any siblings, are referred for blood lead determination. Last year 50 cases of asymptomatic lead poisoning were picked up in this manner where formerly they would have gone undiscovered or been erroneously diagnosed perhaps as poliomyelitis, schizophrenia, or some other ailment. Sixty

per cent (60%) of all lead poisoning cases occur in the "lead belt" in Brooklyn where substandard housing conditions such as those described prevail. Another important fact is that 70% of all lead poisoning cases occur during the summer months.

At the present time, a concentrated lead poisoning case-finding program is going on in a two-block area in the "lead belt." Health Department inspectors go in and take scrapings from the walls of apartments. Urine coproporphyrin tests are done on the children in these households and whenever the results are 3 plus and over, blood lead determinations are done.

Dr. Jacobziner expressed gratification regarding the drop in the lead poisoning case fatality rate. However, he observed, there is nothing to be pleased about in 18 needless deaths or the 170-odd cases which occurred in 1960, and he voiced the hope that the day will come when lead poisoning in New York City will be a thing of the past.

A brief discussion followed. It was suggested by Dr. Leonard Greenburg that perhaps a very bitter-tasting and long-lasting coating could be applied to walls to discourage children from chewing paint and plaster. The problem here, Dr. Jacobziner pointed out, was that unfortunately, children will readily ingest horrible tasting substances such as shoe polish, oil of wintergreen, carbon tetrachloride, etc., and that a bitter taste is apparently no deterrent to accidental ingestion by children.

METHYL ALCOHOL POISONING

Dr. Bodansky introduced Dr. Jack R. Cooper*, Assistant Professor of Pharmacology, Yale University Medical School, who spoke on methyl alcohol poisoning.

Dr. Cooper began his talk with a short history of methyl alcohol poisoning. He stated that by the late 1880's it had become evident in Europe that methyl alcohol was toxic and could cause blindness and death. It was thought originally that this toxic effect was due to impurities. However, this belief was abandoned when a purer preparation became available and still blindness and death followed ingestion or absorption. It was recognized then that methyl alcohol in itself was highly toxic and this information was soon disseminated in the literature.

Methanol poisoning seems to occur in epidemic form. In the

*Invited speaker

first seven months following prohibition, there were about 400 cases of methanol poisoning. In statistical terms, Dr. Cooper related, since World War II, of all cases of blindness in the Armed Services, 8% were due to methanol. The last sizeable outbreak occurred in 1952 in Atlanta, Georgia, with 323 cases due to bootleg liquor.

Dr. Cooper pointed out that methanol poisoning does not occur only by ingestion—there are many incidents resulting from inhalation of methanol vapors and from contact with the substance itself. In one case an individual who spilled a gallon of methanol on his trouser leg became dizzy at first and the following morning was blind—the methanol had been absorbed through the skin.

Usually, the first symptoms of methyl alcohol poisoning are weakness, anorexia, nausea, vomiting, occasionally severe abdominal pain, and the beginning of loss of vision. One of the curious features of methanol poisoning is the long and variable latent period after the ingestion of methyl alcohol—from one to 72 hours—before symptoms appear.

Dr. Cooper described the manner in which vision is affected. Patients usually complain first of loss of peripheral vision which can progress on to total blindness. In some instances, individuals have temporarily lost their sight and recovered it later on, but some of those who recovered sight eventually permanently lost their vision. In ophthalmologic terms, there is usually hyperemia of the optic disk and retinal edema. In terms of pathology, Dr. Cooper pointed out, there is some question about the primary site of damage caused by methanol. In going through the literature, it appears that in most instances the feeling is that the primary site of action is in the ganglion cell layer of the retina and it is clear that the optic nerve is not involved. The symptomatology of methyl alcohol poisoning is a very severe metabolic acidosis—carbon dioxide combining power dropping from a normal of 50% to 10 or 15% or less. Other effects are relatively minor—occasionally on autopsy one finds some effect in the brain.

The biochemistry of methanol poisoning was described by Dr. Cooper as follows:

> From several lines of evidence it now appears that formaldehyde is the toxic agent in blindness due to methanol poisoning, and that the primary locus of action is on the retina. Using retinal slices and homogenates it has been shown that pharmacological concentrations of formal-

dehyde produce a marked inhibition of glycolysis and oxidative phosphorylation, the latter system being the more sensitive. These findings support the hypothesis that retinal cell degeneration leading to blindness is the result of a deficiency of ATP. Whereas in liver mitochrondia of cows and monkeys, formaldehyde at low concentrations is a substrate for oxidative phosphorylation, in retinal mitochrondria of these species formaldehyde is a potent uncoupler of oxidative phosphorylation. Additional support for the thesis that ATP-generating systems are blocked in methanol poisoning comes from the finding that P^{32} incorporation into phospholipids in retinal slices is markedly inhibited by formaldehyde.

Evidence was also presented in favor of the role of alcohol dehydrogenase rather than the catalase-peroxide system being involved in the oxidation of methanol to formaldehyde.

Current treatment for methanol poisoning consists of the administration of large amounts of sodium bicarbonate to counteract the metabolic acidosis and also ethanol to prevent the oxidation of methanol to formaldehyde.

In the discussion that followed, the question was raised whether there was any data on the efficiency of treatment. Dr. Cooper replied that the data was not large, but that in every case except one where it was possible to treat the patient in time his life was saved. Dr. Bodansky asked whether this had been preceded by control animal studies. Dr. Cooper indicated that this had been done and that it had been shown that this is a disease mainly of primates. In other animals, if enough methanol is given they will go into a coma and die but not become blind. Only humans and apes show these characteristics—metabolic acidosis and blindness—in methanol poisoning. The methanol is oxidized to formaldehyde which then produces toxic effects. It has been shown experimentally that ethanol inhibits the oxidation of methanol to formaldehyde. In studies done in terms of effects of various enzyme systems involved, it has also been shown that formaldehyde is about a thousand times more potent than methanol or formic acid.

It was also pointed out by Dr. Cooper that there is a tremendous variation in the dosage which can cause blindness. The smallest dose recorded which produced this effect was 2 teaspoons of methanol. On the other hand, there were instances where individuals drank as much as 500 cc of methanol and showed no other effect than inebriation. Generally, it is agreed that the lethal dose of methanol is about 100 ml. The reason for this wide variation is not known. Perhaps in some cases ethanol is taken in with the methanol.

Mr. Raybin asked whether there were any therapeutic implications for humans in these studies. Dr. Cooper described briefly experimental studies in which direct injections of formaldehyde were given into the eyes of small animals to produce retinal edema followed by the direct injection into the eyes of high concentrations of glucose to counteract the toxic effects; succinate and ascorbic acid have also been used in this manner. Dr. Cooper commented it is recognized an ophthalmologist would be somewhat wary of this mode of treatment for humans, but if he feels the patient would lose his sight in any event, there may be justification in using such a drastic approach.

THE USE OF IPECAC IN THE TREATMENT OF POISONINGS

Dr. Bernard Davidow*, Director of Pharmacology of the New Drug Institute, Inc.,** New York City, gave a talk based on the findings of studies undertaken by the U. S. Food and Drug Administration to evaluate the emetic properties and toxicity of ipecac.

This study, Dr. Davidow related, was started following an "outbreak" of barbiturate poisonings. In the hope of preventing further such occurrences, the use of ipecac as a built-in antidote was considered. The amount of ipecac to be added to barbiturates would not be sufficient to cause vomiting if such drugs were taken in normal doses, but if taken in overdoses it would induce vomiting and so rid the body of toxic material.

Studies were carried out with dogs using ipecac and ipecac combined with barbiturates. The conclusions reached were that ipecac was an ineffective means of producing emetic action when ingested with a barbiturate and, furthermore, that ipecac was highly toxic when given in repeated sub-emetic doses. The toxic effects included bone marrow changes and liver damage.

As an outgrowth of these findings, Dr. Davidow continued, the Food and Drug Administration investigated the use of ipecac in the treatment of alcoholism by the aversion technique. The recommended course of treatment for alcoholics by this technique consisted of giving the subject an alcoholic beverage containing added ipecac about an ounce an hour until he vomited four times. If this was not successful in breaking the drinking habit, another round of treatment was given.

* Formerly Chief, Acute Toxicity Branch, Division of Pharmacology, Food and Drug Administration, Department of Health, Education and Welfare.

**As of June 2, 1961—Chief, Food and Drug Laboratory, Department of Health, City of New York

Dogs were used in the first series of experiments. They were given emetic doses of ipecac fluid extract in gelatin capsules daily for a period of 5 days. Human volunteers were also used in experiments which entailed the administration of the U.S.P. emetic dose of ipecac in whiskey.

The findings in these experiments with dogs and humans demonstrated, in Dr. Davidow's opinion, the uncertainty of ipecac as an emetic and its cumulative toxic effect. Its use in the treatment of accidental chemical poisonings was therefore seriously questioned.

It was pointed out, in the ensuing discussion, that pediatricians generally still recommend ipecac and some report highly effective results. Dr. Davidow expressed the view that it would be better to investigate other means of inducing vomiting and suggested the use of salt water and stroking the back of the throat. He felt it would be unwise for the Committee to endorse the routine use of ipecac as an emetic, and that people should not be encouraged to buy ipecac and keep it in the home for emergency use. In reply to the question as to why the Food and Drug Administration has not recommended that ipecac be removed from over-the-counter availability, Dr. Davidow said that in a manuscript which he has prepared for publication he has recommended review of the legislation in this respect.

Dr. Kerlan (U. S. Food and Drug Administration) informed the Committee that last year Congress enacted the Federal Hazardous Substances Labeling Act which deals with everything not now covered by the Food, Drug and Cosmetic Act. The new legislation defines "toxic" and "highly toxic" substances. A portion of the law is now in effect and it is expected to be completely in force by August of this year. Dr. Kerlan noted that in equating the toxic effects of substances, human experiences will take precedence over animal data.

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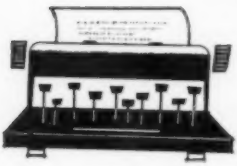
(This is the ninth of a series of papers by Dr. Jacobziner)



Books...

Authors' Summaries...

Edited by

MICHAEL A. BRESCIA, M.D.

KERNICTERUS AND ITS IMPORTANCE IN CEREBRAL PALSY. A Conference presented by the American Academy for Cerebral Palsy. Cloth. Illustrated. Pp. 306. Charles C. Thomas, Springfield, Ill. 1961. $8.75.

KERNICTERUS. Edited by Andrew Sass-Kortsak. Cloth. Illustrated. Pp. 221. University of Toronto Press, Canada, 1961. $8.50.

These two books are considered together because they cover the same subject and complement each other very well. These volumes contain the papers presented at two separate symposia. The former covered the Eleventh Annual Meeting of the American Academy for Cerebral Palsy held in New Orleans, La. in 1957 and the latter covered the Ninth International Congress of Pediatrics in Montreal July 1959. These two symposia, devoted to the same general subject, attest to the importance and increasing interest in kernicterus or, in as most authors prefer to call it, bilirubin encephalopathy.

The book presented by the American Academy for Cerebral Palsy is devoted in large part to an excellent exposition of the pathology of kernicterus with an extensive bibliography. The papers presented in the volume of the International Congress are brief and full of up to date information. They cover such subjects as: Kernicterus of Prematurity; Factors influencing the Life Span of the Red Blood Cell; The Metabolism and Excretion of Bilirubin; The pathology of Kernicterus and the Cytotoxicity of Bilirubin; and Factors Influencing the Distribution of Bilirubin in the Body. The last paper in this book, by William J. Waters, entitled The Protective Action of Albumin in Bilirubin Toxicity in Newborn Puppies, and which incidentally, is only three pages, is a most valuable experiment which presages practical significance in the treatment of hyperbilirubinemia and prevention of kernicterus.

These two volumes are highly recommended for all who are interested in this timely subject. M.A.B.

KOEGLER, R. R. AND COLBERT, E. G.: Childhood Schizophrenia. Role of the Family Physician. (Journal of the American Medical Association 171:1045 October 24, 1959).

Parents of schizophrenic children were questioned about the early symptoms of their children and the results were compared with the responses of the parents of children with behavior disorders. Many areas of significant difference were found. These fell into the broad general categories of decreased socialization, abnormal play patterns, and evidence of neurophysiological disturbance.

There was disorder in many areas, including the sleep pattern. Many of the symptoms showed the concern of the child with the relationship of his body to the external world. Related to this was the tendency to be preoccupied with spinning objects, a lack of interest in other people and other children, and a tendency to withdraw from the external world. Play patterns were repetitive and it was difficult to get the children to change their play, probably on the basis of the function of this symptom as an attempt to reassure the child about his own position in space. Persistent toe-walking and spontaneous whirling were frequently noted.

This study tends to confirm the belief that there is evidence of neurophysiological differences between schizophrenic and non-schizophrenic children. The possible site of dysfunction in this disease is in the brain stem reticular core, but it is emphasized that the changes were subtle and widespread over the entire nervous system. The main method of diagnosis is by developmental history and clinical observation of the neurophysological status of the patient, with attention to the degree of socialization and the play pattern. This is primarily the responsibility of the physican; results of psychological testing have been disappointing with these children and are almost completely valueless with those under 5 years of age.

One of the problems in the treatment of childhood schizophrenia is the usual delay in diagnosis, which often renders treatment impractical because of the many years the condition has gone unrecognized. With increased awareness by the family physician and pediatrician, it is probable that treatment will be more successful and that many more of these children will become useful citizens.

Author's Summary

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